CLAIMS

1. A method of designing a formation of vortex generators for generating turbulent eddies in a fluid stream to promote interaction between at least two types of particles in the fluid stream, comprising the steps of:

(i) identifying relevant characteristics of the two types of particles,

(ii) performing a Stokes Number analysis to determine the optimal characteristic eddy size to cause one type of particle to have a significantly higher slip velocity than the other type of particle, and

(iii) designing a formation to generate eddies in the fluid stream having the optimal size determined in step (ii) above.

2. A method as claimed in claim 1, wherein the relevant characteristics of the two types of particles include the size and density of the particles.

3. A method as claimed in claim 1, wherein the determination of the optimal characteristic eddy size involves an iteration process.

4. A method as claimed in claim 1, wherein the Stokes number for one type of particle is at least an order of magnitude greater than that of the other type of particle.

5. A method as claimed in claim 4, wherein at least one of the particles has a Stokes number in the range 10^{-2} to 10^{2}.

6. A method as claimed in claim 1, wherein the optimal characteristic eddy size is one at which the difference in the Stokes Numbers of the two types of particles is maximised.

7. A method as claimed in claim 1, wherein the formation is designed to comprise a plurality of vanes.

8. A method of promoting interaction between at least two types of particles in a fluid stream by generating turbulent eddies in the fluid stream, characterised in that the

eddies are of such size and/or intensity that the two types of particles are entrained into the eddies to significantly different extents.

9. A method as claimed in claim 8, wherein the eddies are of such size and/or intensity that one type of particle is substantially fully entrained while the other type of particle is not substantially entrained, to thereby maximize relative slip and the likelihood of interactions between the two type of particles.

10. A method as claimed in claim 8, wherein the Stokes number for one type of particle is at least an order of magnitude greater than that of the other type of particle.

11. A method as claimed in claim 10, wherein the Stokes number for at least one of the particles is in the range 10^{-2} to 10^{2}.

12. Apparatus for promoting interaction between at least two types of particles in a fluid stream, comprising means for generating turbulent eddies in the fluid stream, characterised in that the eddies are of such size and/or intensity that the two types of particles are entrained into the eddies to significantly different extents.

13. A method as claimed in claim 12, wherein the eddies are of such size and/or intensity that one type of particle is substantially fully entrained while the other type of particle is not substantially entrained, to thereby maximize relative slip and the likelihood of interactions between the two type of particles.

14. A method as claimed in claim 12, wherein the Stokes number for one type of particle is at least an order of magnitude greater than that of the other type of particle.

15. A method as claimed in claim 14, wherein the Stokes number for at least one of the particles is in the range 10^{-2} to 10^{2}.

16. A formation to generate eddies in a fluid stream, the formation being designed by the method of claim 1.